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Saul Ewing, LLP
TVWORKS, LLC
1500 MARKET STREET
38th Floor
PHILADELPHIA, PA 19102

EXAMINER	
DAO, THUY CHAN	
ART UNIT	PAPER NUMBER
2192	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,401	WANNAMAKER ET AL.	
	Examiner	Art Unit	
	Thuy Dao	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _03_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-13,16 and 18-30* is/are pending in the application.

4a) Of the above claim(s) *31 and 32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-13,16 and 18-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on April 4, 2008 has been entered.

2. Claims 1, 3-13, 16, and 18-30 have been examined.

Response to Amendments

3. In the instant amendments, claims 1, 4, 5, 9-11, 16, 19, 20, and 23 have been amended; and claims 31-32 have been canceled.

4. The objection to claims 31 and 32 is withdrawn in view of Applicants' amendments.

Response to Arguments

5. Applicants' arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

6. Claim 1 and 3-13 are objected to because of minor informalities.

Claim 1 recites limitations "A tool for processing a p-code file, comprising: analyzing ...; identifying ...; and annotating ..." (emphasis added), which appear to contain a gap between said tool and the steps of "analyzing", "identifying", and "annotating".

Accordingly, the phrase is considered to read as - -A method [[tool]] for processing a p-code file, the method comprising: analyzing ...; identifying ...; and annotating ..." as similarly recited in claim 16.

Appropriate correction is requested for claims 1 and 3-13.

Claim Rejections – 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1 and 3-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beadle (art of record, US Patent No. 6,530,075) in view of US Patent No. 4,852,173 to Bahl et al. (art made of record, hereinafter "Bahl").

Claim 1:

Beadle discloses *a method for processing a p-code file, the method comprising:*

analyzing p-code methods to be compiled within said p-code file (e.g., FIG. 8, col.8: 61 – col.9: 10, analyzing p-code methods to be compiled within a p-code file; col.6: 24-52, said a p-code file as a main program; col.4: 16-24; col.7: 57 – col.8: 21);

identifying one or more p-code methods (e.g., FIG. 8, blocks 814-824, identifying 818 Compile Again?YES/NO, 822 setJITEnabled to TRUE; col.8: 12-21, identifying those p-code methods after rerunning a number of times depending on performance thresholds)

at least one profile parameter (e.g., FIG. 8, parameter COUNTER, col.8; 61-65; col.9: 11-27);

an associated priority level (e.g., FIG. 8, block 820-822, an associated priority level as the boolean ALLOWED with two levels: first level (priority level 0) as ALLOWED = FALSE and not Set JIT enable and second level (priority level 1) as ALLOWED = TRUE and set JIT enable, col.9; 28-39; col.7: 65 – col.8: 12);

identifying one or more p-code methods that have a least one profile parameter above a threshold level (e.g., FIG. 8, block 816, profile parameter COUNTER

> threshold /YES → block 820, the associated priority level ALLOWED = TRUE (priority level 1) → block 822, JIT enable (TRUE), col.9: 28-51; col.8: 6-21).

annotating said identified p-code methods to be compiled, said annotating associating a respective level hint with each p-code to be compiled (e.g., col.9: 28-51; col.8: 6-21),

said priority level hints enabling preferential processing of said p-code methods corresponding to said priority level hints in a manner corresponding to an order of said priority level hints (e.g.,

blocks 820-822, annotating set JIT enable (boolean ALLOWED) → setJITEnabled(TRUE), col.9: 28-66, so that said identified p-code methods will be just-in-time compiled by a JIT compiler 410 in FIG. 4); and

FIG. 6, col.7-38 – col.8: 1-21, annotating said identified p-code methods by a performance analysis method to be JITEnabled()).

Beadle discloses "priority level hints" as "FALSE" and "TRUE" in setJITEnabled(FALSE) and setJITEnabled (TRUE), but does not explicitly disclose "*a hierarchical manner corresponding to a hierarchical order*" of said priority level hints.

However, in an analogous art, Bahl further discloses "*a hierarchical manner corresponding to a hierarchical order*" (e.g., col.2: 62 – col.3: 12).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Bahl's teaching into Beadle's teaching. One would have been motivated to do so to construct true/false decisions as a binary decision tree as well-known in the art as suggested by Bahl (e.g., col.2: 15-28).

Claim 3:

The rejection of claim 1 is incorporated. Beadle also discloses *said p-code file comprises an application file for processing by a virtual machine (VM) just-in-time (JIT) compiler* (e.g., col.6: 24-62).

Claim 4:

The rejection of claim 1 is incorporated. Beadle also discloses *said priority level hints are provided in-line with said identified p-code methods* (e.g., col.5: 25-36).

Claim 5:

The rejection of claim 1 is incorporated. Beadle also discloses *said priority level hints are provided as a separate file* (e.g., FIG. 4, said annotations based on information in Data Structure 408, col.6: 24-36).

Claim 6:

The rejection of claim 1 is incorporated. Beadle also discloses *at least one profile parameter comprises at least one of a method execution time, a frequency of method invocation, a number of instructions and a use of loop structures* (e.g., col.5: 30-36).

Claim 7:

The rejection of claim 1 is incorporated. Beadle also discloses *said at least one profile parameter comprises at least one of an execution time parameter, an input/output utilization parameter and a processor utilization parameter* (e.g., FIG. 7, col.8: 22-53).

Claim 8:

The rejection of claim 1 is incorporated. Beadle also discloses *said analyzing comprises identifying at least one of a static profile parameter and a dynamic profile parameter* (e.g., col.5: 4-26; col.8: 28-42).

Claim 9:

The rejection of claim 1 is incorporated. Beadle also discloses *said annotating comprises setting a normally unused bit within a method access flag field of an identified class file* (e.g., FIG. 6, col.7: 38-64).

Claim 10:

The rejection of claim 1 is incorporated. Beadle also discloses *said annotating comprises selectively setting each of a plurality of normally unused bits within a method access flag field of an identified class file, wherein said unused bits are selectively set to define thereby said priority level hint of a respective annotated method* (e.g., col.7: 57 – col.8: 21).

Claim 11:

The rejection of claim 3 is incorporated. Beadle also discloses *each identified byte-code portion of said application is associated with one of a plurality of priority levels, said priority level hints being indicative of respective priority levels* (e.g., FIG. 8, blocks 814-816, col.9: 1-27).

Claim 12:

The rejection of claim 3 is incorporated. Beadle also discloses *selectively pre-compiling at least a portion of said application file* (e.g., col.5; 59-65).

Claim 13:

The rejection of claim 12 is incorporated. Beadle also discloses *said precompiled portion of said application file is included within a virtual machine* (e.g., FIG. 4, block 400, col.6: 24-36).

9. Claims 16 and 18-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beadle in view of Wu (art of record, US Patent Publication No. 2004/0221272 A1) and further in view of US Patent No. 6,640,286 to Kawamoto et al. (art made of record, hereafter "Kawamoto").

Claim 16:

Beadle discloses *a method of adapting the interpretation of a p-code file by a virtual machine (VM), the method comprising:*

identifying one or more p-code methods within said p-code file that are annotated with a respective priority indicative annotation (e.g., col.8: 61-65; col. 9: 28-51; col.8: 6-21)*;*

compiling p-code methods within said p-code file (e.g., FIG. 6, col.8: 1-21, blocks 612-614 setting priority, blocks 604-606 setting non-priority; FIG. 8, col.8: 61 – col.9: 10, different priority levels in block 818 Compile Again?YES/NO, block 820-822, setting ALLOWED = TRUE and JITEnabled() to priority TRUE; col.5: 38-66)

associated with compilation priority indicative annotation (e.g., FIGs. 5A-B, col.6: 53 – col.7: 18; col.5: 3-51)*; and*

storing said compiled p-code methods in a cache (e.g. col.5: 19-22).

Beadle does not explicitly disclose *[storing said compiled p-code methods in a cache] for subsequent execution in place of corresponding interpreted p-code methods.*

However, in an analogous art, Wu further discloses *[storing said compiled p-code methods in a cache] for subsequent execution in place of corresponding interpreted p-code methods* (e.g., page 2, [0027-0028]).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Wu's teaching into Beadle's teaching. One would have been motivated to do so to re-use native code associated with a previously compiled method by a JIT in-memory cache as suggested by Wu (e.g., [0027-0028]).

As set forth above, Beadle and Wu disclose *said compiled p-code methods being preferentially retained in said cache in a manner corresponding to a order of their respective priority indicative annotations*, but does not explicitly disclose "*a hierarchical manner corresponding to a hierarchical order*" of said priority indicative annotations.

However, in an analogous art, Kawamoto further discloses "*a hierarchical manner corresponding to a hierarchical order*" (e.g., col.3: 10-46).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Kawamoto's teaching into Beadle and Wu's teaching. One would have been motivated to do so to enable a cache with a dynamic

priority change and increase the cache hit rate as suggested by Kawamoto (e.g., col.2: 26-55).

Claim 18:

The rejection of claim 16 is incorporated. Beadle also discloses *said p-code file comprises an application file for processing by a virtual machine (VM) just-in-time (JIT) compiler* (e.g., col.6: 24-62).

Claim 19:

The rejection of claim 16 is incorporated. Beadle also discloses *said priority indicative annotations are provided in-line with said identified p-code methods* (e.g., col.5: 25-36).

Claim 20:

The rejection of claim 16 is incorporated. Beadle also discloses *said indicative annotations are provided as a separate file* (e.g., col.6: 24-36).

Claim 21:

The rejection of claim 16 is incorporated. Beadle also discloses *in response to cache memory utilization above a threshold level, prioritizing the contents of said cache memory* (e.g., FIG. 8, block 822, col.9: 30-39).

Claim 22:

The rejection of claim 21 is incorporated. Beadle also discloses *said cache memory contents are prioritized by deleting from said cache compiled code associated with a least recently executed method* (e.g., FIG. 6, blocks 604 and 612, col.7: 45-50 and 65-67).

Claim 23:

The rejection of claim 21 is incorporated. Beadle also discloses *said cache memory contents are prioritized by deleting from said cache compiled code associated with a previously compiled method having a lower priority level than a presently compiled method* (e.g., col.9: 30-39).

Claim 24:

The rejection of claim 20 is incorporated. Beadle also discloses *compiled byte-code stored in said cache is accessed via a cache map, said cache map being updated in response to a change in cache utilization* (e.g., col.6: 24-52).

Claim 25:

The rejection of claim 18 is incorporated. Beadle also discloses *compiling non-annotated byte-code within said application if said non-annotated byte-code utilizes virtual machine resources beyond a threshold level* (e.g., FIG. 8, block 818, col.9: 21-27).

Claim 26:

The rejection of claim 25 is incorporated. Beadle also discloses *said compiled non-annotated byte-code is assigned a priority level in accordance with said utilized virtual machine resources* (e.g., col.9: 1-27).

Claim 27:

The rejection of claim 26 is incorporated. Beadle also discloses *said priority level of said annotated byte-code is further adapted in accordance with said utilized virtual machine resources* (e.g., col.8: 22-53).

Claim 28:

The rejection of claim 20 is incorporated. Beadle also discloses *said compiled annotated byte-code is assigned a priority level in accordance with said utilized virtual machine resources* (e.g., col.8: 61-67).

Claim 29:

The rejection of claim 28 is incorporated. Beadle also discloses *said priority level of said annotated byte-code is further adapted in accordance with said utilized virtual machine resources* (e.g., col.8: 22-53).

Claim 30:

The rejection of claim 26 is incorporated. Beadle also discloses *said virtual machine resources comprise at least one of an execution time parameter, an input/output utilization parameter and a processor utilization parameter* (e.g., col.8: 22-53).

Conclusion

10. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone/fax numbers are (571) 272 8570 and (571) 273 8570, respectively. The examiner can normally be reached on every Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Thuy Dao/
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192